2/1 - Mathematics - Sec

* Defuzzification to crisp set :-

[1] Max - membership :-

ناخذ العناصر ذات ال μ الأكبر.

[2] Centroid method :-

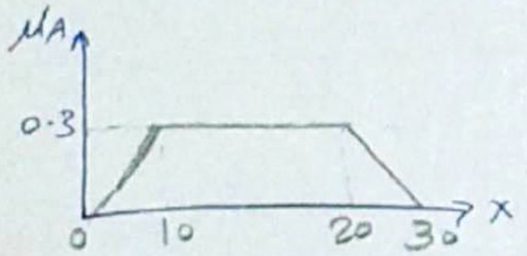
$$x^* = \frac{\int \mu_c \cdot x \, dx}{\int \mu_c \, dx}$$

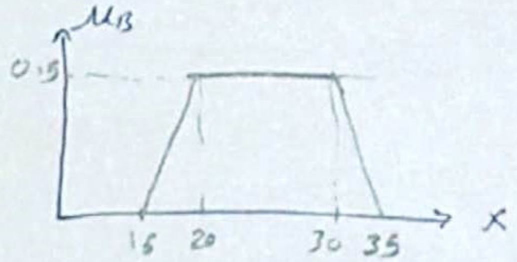
نحولها لعنصر واحد فقط زي مركز الثقل.

سؤال امتحان

* ex : let $A = \int \frac{\mu_A}{x}$, $B = \frac{\mu_B}{x}$

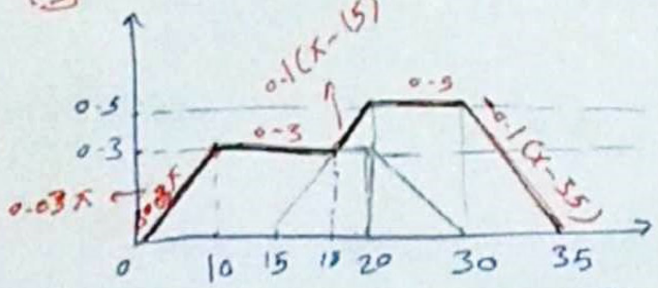
defuzzy set with membership





Soln

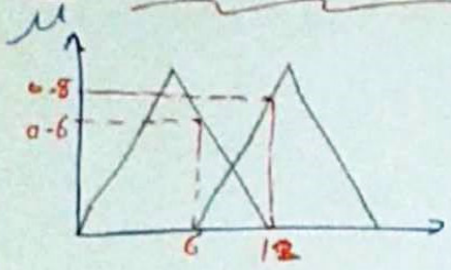
[3]



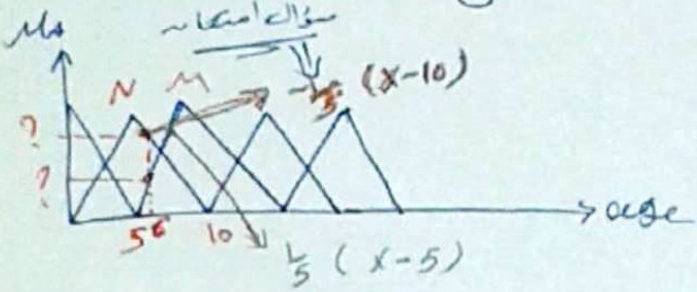
$$x^* = \frac{\int_0^{10} 0.03x^2 + \int_{10}^{18} 0.3x + \int_{18}^{20} 0.1(x-15)x + \int_{20}^{30} 0.5x + \int_{30}^{35} -0.1(x-35)x}{\int_0^{10} 0.03x + \int_{10}^{18} 0.3 + \int_{18}^{20} 0.1(x-15) + \int_{20}^{30} 0.5 + \int_{30}^{35} -0.1(x-55)}$$

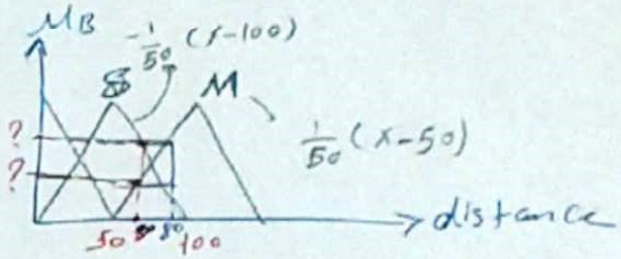
$= 20.41$ #

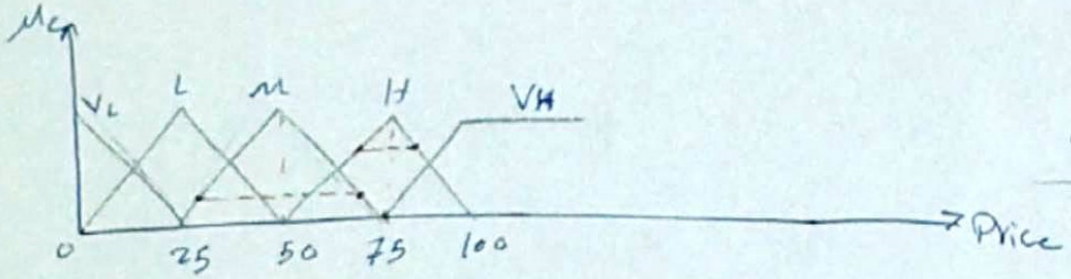
[3] Weight average method :



$$x^* = \frac{(6)(0.6) + (12)(0.8)}{0.6 + 0.8} = 9$$







age / distance	0.8 N	0.2 M
0.4 S	M 0.4	H 0.2
0.6 M	H 0.6	H 0.2

Solu

age: $\mu_{AN} = \frac{-1}{5}(6-10) = 0.8$, $\mu_{AM} = \frac{1}{5}(6-5) = 0.2$

distance: $\mu_{BS} = \frac{-1}{50}(80-100) = 0.4$, $\mu_{BM} = \frac{1}{50}(80-50) = 0.6$

Def: $\mu_{CM} = 0.4$, $\mu_{CH} = 0.6$

Price: $\text{Price} = \frac{(0.4)(50000) + (0.6)(75000)}{0.4 + 0.6} = 65000$